

Notice of Allowability

Application No.

10/777,640

Examiner

Irakli Kiknadze

Applicant(s)

SAKAGUCHI ET AL.

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the Amendment filed 7/25/2006.
2. ☒ The allowed claim(s) is/are 2-4 and 10-23.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 2/13/2004
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

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DETAILED ACTION

1. In response to the Office action dated January 25, 2006 the Amendment has been received on July 25, 2006.

Claims 1 and 5-9 have been canceled.

Claims 2-4 and 10-23 are currently pending in this application.

Allowable Subject Matter

2. Claims 2-4 and 10-23 are allowed.

3. The following is an examiner's statement of reasons for allowance:

Claim 2 is allowed because the prior art fails to teach or make obvious a method for obtaining an X-ray image using an X-ray diagnosis apparatus comprising: collecting, substantially simultaneously, image data including a scatter component using a first and a second X-ray detectors; and obtaining X-ray images imaged using a first imaging system and a second imaging system by subtracting the scatter data collected by the first and second X-ray detectors from the image data including the scatter component collected by the first and second X-ray detectors, wherein a collection time of a scatter data is shorter than a collection time of the image data including the scatter component as claimed in combination with all elements of the claim.

Claim 3 is allowed because the prior art fails to teach or make obvious a method for obtaining an X-ray image using an X-ray diagnosis apparatus, the method

comprising: collecting, substantially simultaneously, image data including a scatter component using a first and a second X-ray detectors after at least one X-ray is irradiated from a second X-ray tube; and obtaining X-ray images imaged using a first imaging system and a second imaging system by subtracting the scatter data collected by the first and second X-ray detectors from the image data including the scatter component collected by the first and second X-ray detectors, wherein a collection time of the scatter data is shorter than a collection time of the image data including the scatter component in combination with all elements of the claim.

Claim 4 is allowed because the prior art fails to teach or make obvious a method a method for obtaining an X-ray image using an X-ray diagnosis apparatus, the method comprising: subsequently collecting, substantially simultaneously, image data including a scatter component using a first and a second X-ray detectors; subtracting a second scatter data from the first scatter data, thereby obtaining subtracted scatter data; obtaining an X-ray image by subtracting the subtracted scatter data from the image data including the scatter component collected by the first X-ray detector; and obtaining an X-ray image by subtracting the scatter data collected by the second X-ray detector from the image data including the scatter component collected by the second X-ray detector, wherein a collection type of the scatter data is shorter than a collection time of the image data including the scatter component in combination with all elements of the claim.

Claim 10 is allowed because the prior art fails to teach or make obvious a method for obtaining X-ray image by an X-ray diagnosis apparatus, the method

comprising: collecting third image data at a speed lower than a collecting speed of a second image data using a first X-ray detector based on the X-rays irradiated from a first and second X-ray tubes; collecting fourth image data at a speed lower than a collecting speed of the first image data using the second X-ray detector, substantially simultaneously with the collecting the third image data, based on the X-rays irradiated from the first and second X-ray tubes; removing a scatter component included in the third image data using the second image data; and removing a scatter component included in the fourth image data using the first image data in combination with all elements of the claim. Claims 11-18 are allowable by virtue of their dependence.

Claim 19 is allowed because the prior art fails to teach or make obvious a method for obtaining an X-ray image using an X-ray diagnosis apparatus, the method comprising: collecting forth image data using a second X-ray detector, substantially simultaneously to collecting third image data, based on the X-rays irradiated from a first and second X-ray tubes; removing a scatter component included in the third image data using the second image data; and removing a scatter component included in the fourth image data using first image data in combination with all elements of the claim.

Claim 20 is allowed because the prior art fails to teach or make obvious a method for obtaining an X-ray image using an X-ray diagnosis apparatus, the method comprising: collecting second image data using the second X-ray detector based on the X-rays irradiated from the first and second X-ray tubes at a lower speed than a collecting speed of the first image data; and removing a scatter component included in

the second image data using the first image data in combination with all elements of the claim.

Claim 21 is allowed because the prior art fails to teach or make obvious an X-ray diagnosis apparatus, comprising: a controller configured to control the second X-ray detector to collect first image data based on at least one X-ray irradiated from a first X-ray tube, a first X-ray detector to collect second image data based on at least one X-ray irradiated from a second X-ray tube, the first X-ray detector to collect third image data based on the X-rays irradiated from the first and second X-ray tubes at a lower speed than a collecting speed of the second image data, the second X-ray detector to collect fourth image data, substantially simultaneously to collecting the third image data, based on the X-rays irradiated from the first and second X-ray tubes at a lower speed than a collecting speed of the first image data; and an image processor configured to remove a scatter component included in the third image data using the second image data and to remove a scatter component included in the fourth image data using the first image data in combination with all elements of claim.

Claim 22 is allowed because the prior art fails to teach or make obvious an X-ray diagnosis apparatus, comprising: a controller configured to control a second X-ray detector to collect first image data based on at least one X-ray irradiated from a first X-ray tube, a first X-ray detector to collect second image data based on at least one X-ray irradiated from the first X-ray tube, the first X-ray detector to collect third image data based on the X-rays irradiated from the first and a second X-ray tubes, the second X-ray detector to collect fourth image data, substantially simultaneously to collecting the

third image data, based on the X-rays irradiated from the first and second X-ray tubes; and an image processor configured to remove a scatter component included in the third image data by using the second image data and to remove a scatter component included in the fourth image data using the first image data in combination with all elements of the claim.

Claim 23 is allowed because the prior art fails to teach or make obvious an X-ray diagnosis apparatus, comprising: a controller configured to control a first X-ray tube to irradiate at least one X-ray, a second X-ray detector to collect first image data based on the at least one X-ray irradiated from the first X-ray tube, a second X-ray tube to irradiate at least one X-ray, and the second X-ray detector to collect second image data based on the X-rays irradiated from the first and second X-ray tubes at a lower speed than a collecting speed of the first image data; and an image processor configured to remove a scatter component included in the second image data using the first image data in combination with all elements of the claim.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Busse et al. (US Patent Application Publication 2003/0146389

A1) and Ozaki (US Patent 6,876,719 B2) the methods and apparatus for teach X-ray scatter correction based on projection and scatter correction data.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irakli Kiknadze whose telephone number is 571-272-2493. The examiner can normally be reached on 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on 571-272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Irakli Kiknadze
August 24, 2006

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Courtney Thomas
Courtney Thomas
Primary Examiner